TRA THOMAS REID ASSOCIATES
ENVIRONMENTAL CONSULTANTS
560 Waverley Street, Suite 201, P.O. BOX 880, Palo Alto, CA 94301
Tel: (650) 327-0429 ❑ Fax: (650) 327-4024 ❑ www.TRAenviro.com

September 9, 2003

Dan Cardozo
Adams, Broadwell, Joseph and Cardozo
651 Gateway Boulevard, Suite 900
South San Francisco, CA 94080

Re: Environmental effects of California adoption of PEX-AL-PEX for carrying potable water.

Dear Mr. Cardozo:

I have reviewed and studied the available data pertaining to the use of plastic pipe manufactured from cross-linked polyethylene (PEX) for potable water use inside dwellings. Based on this review I prepared several technical comment letters addressing the potential for adverse environmental and health and safety impacts arising from the use of PEX to carry potable water. These technical reviews were submitted as comments during the 2001 California Plumbing Code approval process and formed, in part, the evidentiary basis for barring, pending further review, the unregulated use of PEX to carry potable water.

The 2003 Uniform Plumbing Code ("UPC") has added a new version of PEX piping not included in the previous UPC: PEX-AL-PEX. PEX-AL-PEX is a PEX composite consisting of a thin layer of PEX in an aluminum tube and then coated on the outside with PEX. This layer of aluminum may or may not mitigate some of the serious problems PEX has with the permeation of pesticides, gasoline and other contaminants from the outside environment through the PEX piping and into the drinking water carried within. However, the potentially serious problem of the leaching of harmful chemical compounds from the PEX piping itself into the drinking water most likely *remains unmitigated* since the potable water will still be directly in contact with PEX.

Since the adoption of the 2001 California Plumbing Code, Wirsbo, a major PEX manufacturer has disclosed that PEX does have chemical leaching problems including problems with the leaching of MTBE (methyl tertiary butyl ether) and TBA (tertiary butyl alcohol) which are by-products of the

manufacturing process. Furthermore, testing by NSF International, a private model code organization, has found MTBE in potable water flushed through PEX piping in concentrations of 15, 17 and 22 parts per billion. The taste and odor threshold for MTBE is 5 parts per billion and the EPA action level is 20 parts per billion, showing that the leaching of MTBE, a known human carcinogen, is indeed a serious concern.

The chemical leaching problem observed in PEX is likely not mitigated in the new PEX product, PEX-AL-PEX, since the PEX interior is the same and thus should logically have the identical leaching problems. In my opinion, the potential chemical leaching problem of PEX-AL-PEX, as with PEX, requires further study and full disclosure by the manufacturers in order to ensure that this product is safe for carrying potable water.

Sincerely,

Thomas S. Reid